



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **KANO, Takashi et al.**

Serial No.: **09/941,982**

Group Art Unit: **2812**

Filed: **August 30, 2001**

Examiner: **MULPURI, Savitri**

P.T.O. Confirmation No.: **7536**

For. **METHOD OF FORMING NITRIDE-BASED SEMICONDUCTOR LAYER, AND
METHOD OF MANUFACTURING NITRIDE-BASED SEMICONDUCTOR DEVICE**

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Takashi Kano, a citizen of Japan, hereby declare and state the following:

I graduated in Electronics Engineering from Faculty of Engineering and Design, Kyoto Institute of Technology. My research involved 3C-SiC Crystal Growth using ECR-Plasma.

Since 1990, I have been employed by Sanyo Electric Co., LTD. and affiliated with Photonics Devices Department, Materials and Devices Development Center Business Unit. I am and have been engaged in the research and development of blue-violet semiconductor lasers. In particular, I have been engaged in the research and development of crystal growth of blue-violet semiconductor laser structure composed of III - V nitride using MOCVD.

I am a co-inventor of the invention of United States Patent Application Serial No. 09/941,982.

I have read and am familiar with the above-identified patent application as well as the Official Action dated January 8, 2003 and the cited references.

I reported the effects resulting from the relation between the growth rate and the thickness described in claims of the aforementioned application at the 61st Autumn meeting in September 2000 of the Japan Society of Applied Physics. Copies of the extended abstracts of the meeting and OHP sheets used for the report along with English translation thereof were filed in the U.S. Patent and

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Trademark Office with the response of June 9, 2003.

I declare the following:

I consider that the relation between the growth rate and the thickness described in Imai et al. (U.S. Patent No. 5,602,418) suggests or teaches a technique of forming a layer having a small thickness at a low growth rate and forming a layer having a large thickness at a high growth rate.

At the time the invention was made, those skilled in the art were not motivated to select an extremely high growth rate of at least 7 Å/sec in order to form a layer having an extremely small thickness of 50 to 300 Å.

Therefore, it was not obvious to those skilled in the art at the time the invention was made to form a layer having an extremely small thickness of 50 to 300 Å at an extremely high growth rate of at least 7 Å/sec.

I believe that as I reported at the 61st Autumn meeting in September 2000 of the Japan Society of Applied Physics, forming an AlGaIn buffer layer having a thickness of 120 Å at the growth rate of 25.0 Å/sec in the range defined in the present invention brings out an unexpected remarkable effect. I also believe that the range of the growth rate (at least 7 Å/sec, defined in the present invention is the critical range for attaining such an unexpected effect.

The undersigned declares that all statements made herein of his/her own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of the application or any patent issued thereon.

c/o SANYO ELECTRIC CO., LTD.,
2-5-5, Keihanondori, Moriguchi-shi,
Osaka 570-8677, Japan

Takashi Kano
Takashi Kano

Signed this 24th day of June, 2003